Fall 2011, Calculus IV, Syllabus

Welcome to Calculus! Many of the topics you have worked hard to master over the years in arithmetic, algebra, geometry, graphical analysis, and trigonometry will serve you well as you begin your study of Calculus. You will learn about limits, derivatives, integrals, differential equations, sequences of numbers, series, three-dimensional coordinates, vector functions, parametric curves and surfaces, multivariable functions, partial derivatives, multiple integration, vector fields, and many other fascinating things. But when you are hanging out with your friends and family, how will you describe to them what Calculus is about when they ask? If you are not careful in your response you will be the recipient of an "eye roll" signaling that you better change topics to perhaps the latest professional sporting event (here is when I get to do an "eye roll" of disinterest), or the dreaded "I don't do math" response, or even that comical "I'm so pretty (or handsome) to do math" reply.

When you are asked "What is Calculus about?" you can reply with a simple answer: Calculus is the study and analysis of how things change. Simple. Calculus gets complicated at times, and yes it requires competency in algebra, trigonometry, and many other prerequisite subjects, but always remember what we are doing is developing a powerful framework of mathematical tools for analyzing and describing change. Whether it is how the position of ball flying through the air changes as a function of time, how the future value of an investment changes as a function of the rate being earned, or how the outputs of a function change as the inputs vary, we will be learning methods to measure and analyze changing quantities. We also study techniques and methods for determining accumulations, or total amounts of change. If we know how the speed of a moving object changes over time, then we ought to be able to figure out the object's total change, that is, how far the object has moved for some time period. If the speed of an object is constant, then the formula \( d=r \times t \) is all that is needed to determine the net distance an object has moved. But many moving objects don't move at a constant rate, in which case \( d=r \times t \) isn't very helpful. We will learn in Calculus very powerful methods for measuring accumulations even in situations where change rates themselves are changing.

Whatever changing situation you find yourself in you'll be better prepared with Calculus in your toolbox.
Materials

Text/Pearson MyLab (MyMathLab) account: The text for the course is Calculus: Early Transcendentals, 1st edition, by Briggs, Cochran, Gilette, Schulz, and published by Pearson/Addison-Wesley. The same text is used for four calculus courses: Math 151, Math 152, Math 153, and Math 254. You can choose to purchase either a printed text/MyLab bundle (~$147 in WWCC Bookstore, or you could buy the same bundle new on Amazon for $192 if you want) or a standalone MyLab access code (~$82 in WWCC Bookstore). The printed text without MyLab access will not be sufficient for the course. The MyLab site contains the complete text as an interactive eBook. The eBook can be printed if necessary, but if you think you'll need a physical form for the text it would be wise to purchase the printed text/MyLab bundle to begin with. More details will be given in class. If you find a textbook to buy somewhere without a MyLab access code included, then be sure that the price you pay for the text plus the $82 MyLab access code price is less than the $147 bundle price offered in the WWCC Bookstore, otherwise you are paying more than you should.

Create your online MyMathLab account by going to http://PearsonMyLab.com/, the courseID is schulz86581, and use the access code you purchased. If you don't yet have an access code you can create your account anyway, join the course, and continue to log in for up to 17 days before you have to enter a code for continued access.

Engineering Computation Paper: All handwritten work that is turned in for credit must be written on Engineering Computation Paper. It's time to move beyond wide-ruled notebook paper.

Graphing Calculator: A graphing calculator is strongly recommended. It is assumed that all calculus students know how to use their graphing calculator. If this is not the case, then be sure to contact the instructor to arrange for a quick tutorial. Use of a calculator will not be discussed in class, however, use of a computer algebra system (Mathematica 8) is required and expected.

Mathematica 8: We will be working with Mathematica 8 throughout the four-course calculus series, Linear Algebra (Math 220), and Differential Equations (Math 238). Mathematica 8 is accessible on campus computers. You can request your own copy of Mathematica 8 no charge to install on your personal computer – more details given in class. All course related materials such as lecture notes, interactive mathematical
explorations, handouts, assignments, exam reviews, exams, exam solutions, and the like are Mathematica 8 notebooks. Request your own copy by filling out the Mathematica Activation Key Request Form. You must use your WWCC student email address on the Request Form.

**Email Address:** Please use an email address you check regularly when you sign up for your MyLab account. I'd prefer you use your WWCC student email address, but if you don't access this account regularly then it would be better to use a different address. Regardless of what address you use, be absolutely certain you enter it correctly when you create your MyLab account.

**Attendance**

Attendance at every class session is expected. Duh. I understand absences are sometimes unavoidable and will work with students when such occasions arise. In the event of an absence occurring on the date of a scheduled exam, prior arrangements must be made in order to schedule another time to write the exam. Don't skip an exam and then ask nonchalantly when can you make it up. You won't like my answer.

**Cell Phones, PDA's, and Computer use during class**

*Our classroom is a no cell phone environment. If you use it during class, then you will lose it for the rest of class.* Develop the habit of silencing your phone when entering the classroom – I'm confident everyone can manage to go 50 minutes without touching their cell phone to talk, text, facebook, tweet, check the web, or do so other kind of activity with the phone.

Our classroom is equipped with computers which will be used during class for material related to our work. Unless directed to use a computer during class, the machines should not be used. This means that web surfing, checking your email, using social networking sites, etc. is off limits during class. Tempting yes because everything is only a click or two away, but be strong and resist the temptation!

**Textbook**

*Each assigned section of our textbook should be used!* Rather than using the textbook as simply a collection of exercise sets you should open it, read it, summarize it, investigate interactive figures, work through examples, take notes, and ask questions about the material in the text. This use of a mathematics text is perhaps a novel idea for many students, but the calculus ebook is not just a plain old static book. Use it. Reading a mathematics text should never be a passive experience.
Homeworks, projects, and exams

There will be one-hour exams and a comprehensive final exam. Each of the exams will be comprised of an in-class portion done on paper using your brain, pencil, and graphing calculator perhaps, and a take-home portion that will require the use of Mathematica. There will be numerous homework assignments completed in MyMathLab along with assignments done outside of MyMathLab.

Grades

Course grades are simply a function of the percentage of possible points earned on all homeworks, projects, and exams. Your current grade status in the course will be available online in MyMathLab. You don't have to ask me to tell you your grade; log into MyMathLab and look for yourself.

CoursePercentage = (SumOfPointsEarned)/(TotalOfPointsPossible)

Letter grades are assigned to course percentages following the standard 90% up to 100% are A-/A's, 80% up to 90% are B-/B/B+'s, 70% up to 80% are C-/C/C+'s, 60% up to 70% are the D-/D/D+, and below 60% are F's.